WHAT IS CLAIMED IS:

1. A lens evaluation method, comprising the steps of:

irradiating an image light including a resolution-measuring test pattern onto a screen through a lens to display an image of the resolution-measuring test pattern on the screen;

detecting a luminance of the image of the displayed test pattern by an image import device using an image sensor, a resolution evaluation value being calculated based on the detected luminance value;

acquiring a background luminance value of a background part without the test pattern being formed by the image import device using the image sensor;

acquiring a maximum luminance value in the test pattern image by the image import device using the image sensor;

acquiring a minimum luminance value in the test pattern image by the image import device using the image sensor; and

calculating the resolution evaluation value based on the background luminance value, the maximum luminance value and the minimum luminance value obtained through the respective steps.

2. The lens evaluation method according to claim 1, wherein the resolution evaluation value (MTF) calculated by the evaluation value calculating step is represented as

MTF=(Imax-Imin)/(Io*2-Imax-Imin)

where the background luminance value is represented as Io, the maximum luminance value is represented as Imax and the minimum luminance value is represented as Imin.

3. The lens evaluation method according to claim 1, wherein the image sensor is a charge coupled device and the background luminance value acquiring step, the maximum luminance value acquiring step and the minimum luminance value acquiring step are conducted at a part where an output of the charge coupled device in response to the

luminance value is in proportional relationship.

4. The lens evaluation method according to claim 1, wherein the lens is arranged as a lens set including a plurality of light condensers disposed along an optical axis direction and has a zooming function for enlarging and reducing a projected image by changing relative position of the respective light condensers, and

wherein the background luminance value acquiring step, the maximum luminance value acquiring step and the minimum luminance value acquiring step are conducted at least for the minimum magnification and maximum magnification of the lens respectively.

5. The lens evaluation method according to claim 1, wherein the image sensor is movable along the screen, the method further comprising the steps of:

moving the image sensor along an outer periphery of the projected image projected on the screen;

acquiring the peripheral image of the projected image at a predetermined position by the image import device using the image sensor while moving the image sensor; and

calculating a distortion aberration of the projected image based on the peripheral image of the projected image acquired during the peripheral image acquiring step.

6. The lens evaluation method according to claim 5,

wherein a check sheet formed with the test pattern includes a frame portion formed adjacent to an outer periphery of a formation area of the projected image, and

wherein the image of the frame portion is acquired during the peripheral image acquiring step.

7. The lens evaluation method according to claim 1, further comprising the steps of:

calculating an input level value based on the background luminance value, the maximum luminance value and the minimum luminance value, wherein the background luminance value acquiring step, the maximum luminance value acquiring step, the

minimum luminance value acquiring step and the input level value calculating step are conducted at a plurality of positions in the projected image;

acquiring an illumination at a predetermined first position of the projected image where the background luminance value acquiring step, the maximum luminance value acquiring step, the minimum luminance value acquiring step and the input level value calculating step are conducted; and

calculating an in-plane illumination of the entire projected image by calculating the illumination of a second position other than the first position based on the input level value and illumination at the first position and the input level value at the second position.

8. The lens evaluation method according to claim 7, wherein the illumination (Le) at the second position is represented as

Le=Lo*Iie/Iio

where the input level value at the second position is represented as Iie, the input level value at the first position is represented as Iio and the illumination at the first position is represented as Lo.

9. A lens-evaluating apparatus for evaluating a resolution of a lens, comprising

a check sheet formed with a resolution-measuring test pattern;

a light source for irradiating light on the check sheet to introduce an image light including the test pattern to the lens;

a screen to which the image light irradiated by the lens is projected;

an image sensor for taking an image of the test pattern displayed on the screen;

an image import device for importing the image taken by the image sensor to generate an image signal; and

a signal processor including a resolution evaluation value calculator that arithmetically operates the resolution evaluation value based on the image signal outputted by the image import device,

wherein the image sensor is provided with a light adjuster for adjusting an

amount of light incident on the image sensor, the light adjuster being controlled based on a control signal from the signal processor.

10. The lens-evaluating apparatus according to claim 9, wherein the resolution evaluation value calculator arithmetically operates the resolution evaluation value based on a background luminance value of a part of the check sheet having no test pattern formed thereon, a maximum luminance value and a minimum luminance value in the test pattern image.

11. The lens-evaluating apparatus according to claim 10, wherein the resolution evaluation value calculator calculates the resolution evaluation value (MTF) by a formula of

MTF=(Imax-Imin)/(Io*2-Imax-Imin)

where the background luminance value is represented as Io, the maximum luminance value is represented as Imax and the minimum luminance value is represented as Imin.

12. The lens-evaluating apparatus according to claim 9, further comprising an image sensor moving mechanism that moves the image sensor along a surface of the screen,

the signal processor further comprising: an image sensor controller for controlling movement of the image sensor along an outer periphery of the projected image projected on the screen;

a peripheral image sensor for acquiring a peripheral image of the projected image at a predetermined position with the image import device using the image sensor while moving the image sensor by the image sensor controller; and

a distortion aberration calculator for calculating a distortion aberration of the projected image based on the peripheral image of the projected image acquired by the peripheral image sensor.

13. The lens-evaluating apparatus according to claim 12, the check sheet further comprising a frame portion formed adjacent to an outer periphery of a formation area of

the projected image projected on the screen.

14. The lens-evaluating apparatus according to claim 12, further comprising an illumination sensor for detecting an illumination at a predetermined first position in the projected image.

15. The lens-evaluating apparatus according to claim 14, wherein the resolution evaluation value calculator arithmetically operates an input level value based on the background luminance value, the maximum luminance value and the minimum luminance value and the input level value is acquired by the resolution evaluation value calculator at a plurality of positions in the projected image including the first position where the illumination is detected, and

wherein the signal processor includes an in-plane illumination calculator for calculating an in-plane illumination of the entire projected image by calculating the illumination of a second position other than the first position based on the illumination at the first position detected by the illumination sensor, the input level value at the first position calculated by the resolution evaluation value calculator and the input level value at the second position.